Personalities in Science

MAJOR EDWIN HOWARD ARMSTRONG

IN THE field of radio, the name of Major Edwin Howard Armstrong is second only to that of Marconi. Recently the Edison Medal was presented by the American Institute of Electrical Engineers to Major Armstrong "for distinguished contributions to the art of electric communication, notably the regenerative circuit, the superheterodyne, and frequency modulation." With characteristic modesty, Major Armstrong accepted the Medal with the following words:

"The continuous good fortune that has followed me, providing second chances at inventions when the first chance was missed and tossed away, has been all that a man could hope for and more than he has any right to expect."

Internationally known for inventions which created modern radio and particularly for the invention of wideband frequency modulation, Armstrong is Professor of Electrical Engineering at Columbia University, and likes best the title, "a former pupil of Pupin." Thirty years ago, when Armstrong finished his engineering studies at Columbia, he became the protege of Michael Pupin, Edison Medal winner in 1920.

Armstrong was born in New York City December 18, 1890. While a sophomore at Columbia he became interested in the operating properties of the audion detector, or radio tube. Experimentation at his home in Yonkers, New York, led to his invention of the feedback or regenerative circuit, which increased the sensitivity of the audion hundreds of times as a detector of radio signals. For the first time, useful, solid transoceanic and transcontinental radio signals could be received. The initial Armstrong invention also produced for the first time continuous high-frequency oscillations by means of a thermionic tube.

These giant strides in radio started 18 years of litigation costing millions of dollars. The U. S. Supreme Court ruled against Armstrong. Disagreement with the verdict of this tribunal was expressed by the Franklin Institute, the American Institute of Electrical Engineers, and the Institute of Radio Enginers in awarding their highest honors and medals to Professor Armstrong.

The advent of 1917 found Armstrong in France as an army captain, later as a Major, with the United States Signal Corps, in charge of the technical end of Aircraft and Intelligence Radio. While serving in France he perfected his second invention, the superheterodyne circuit, magnifying the weak signals on the short waves thousands of times. This receiving system was greatly superior to any development up to that time, and is still used today in almost all types of radio receivers.

Armstrong's development of the superregenerative circuit, disclosed in 1922, was his third great invention. The superregenerative was the means of increasing the sensitivity of the regenerative some thousands of times above that normally obtained by means of simple regeneration, and made possible exploring and developing the short-wave channels, notably for two-way police and military communication systems.

Armstrong secured patents for his wideband frequency modulation invention, his fourth outstanding contribution to radio and to the world, in 1933. Through "FM," static was conquered, ultra-high-fidelity broadcasting was made practical, and there was opened the heretofore restricted territory of United States radio to the development of more stations and more networks.

Among the honors accorded Major Armstrong are the Doctor of Science Degree from Columbia in 1929 and from Muhlenberg College in 1941; the Medal of Honor of the Institute of Radio Engineers in 1917; the Egleston Medal of Columbia University, 1939; the Holley Medal of the American Society of Mechanical Engineers, 1940; the Franklin Medal of the Franklin Institute, 1941; and the John Scott Medal awarded by the Board of Directors of the City Trusts, City of Philadelphia, 1942. The French government made him a Chevalier de la Legion d'honneur in 1919, and he received one of the 19 national awards of "Modern Pioneer" by the National Association of Manufacturers in 1940.

Major Armstrong may be found at almost any hour of the day in his office or in his laboratory in the Philosophy Building at Columbia. He is neither difficult to find nor hard to see. Rejecting any attributes of genius, Major Armstrong attributes his success in no small measure to "luck, plus a tremendous amount of hard work." His large, well-knit frame bespeaks the outdoor man rather than the laboratory worker. Armstrong's energies these days are now devoted almost entirely to aiding in the war effort—"just like everybody else," in his own words.